# Strategies to reduce post-slaughter beef loss through evaluation of quality and application of Hazard Analysis and Critical Control Points (HACCP) in slaughter centre in Ethiopia

**Project on Improving the Livelihoods of Poor Livestock-keepers in Africa through Community-Based Management of Indigenous Farm Animal Genetic Resources**

**Melese Abdisa**

PhD student

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# Prologue

- Food shortage can result from failure of appropriate pre and post slaughter handling and processing
- In view of livestock resource of Ethiopia, beef is among the major food source and export item (FAO, 2004). Beef accounts for 40% of the meat off-take
- The beef off-take is partly from Horro beef which is originated in Horro district of Oromia (Mason, 1996)
- The present overall beef export amounts only to 75,900 MT (FAO, 2004) indicating under utilization of the potential

# Prologue (cont...)

- Presumed reasons and analysis of scarcely available data reveal that it may be related to quality and safety:
  - at the level of production and transportation of the beef animal
  - post slaughter handling and processing of the beef
- Hence, beef quality is multidimensional (Brunsø, 2005)
  - product-oriented, process oriented and user-oriented
- Safety can be addressed by plant specific application of HACCP

# Prologue (cont...)

- Inappropriate post slaughter activities can lead to post slaughter beef loss and/or endangering of the public health (FAO, 2003)

- Regarding state of the art and knowledge gap?
  - feeding trials and thus comparative carcass studies were extensively conducted

# Prologue (cont...)

- No reported efforts to understand the physiological and structural components of beef muscle which are essential to comprehend effects they have on beef quality, safety and associated post slaughter loss

- It was also noted that regulatory authorities are moving towards production of safe and quality beef for export market and domestic use (EHNRI, 2004)

# Objectives

- To investigate the effects of production systems on beef quality and safety
- To assess hazards and identify sites of contamination
- To examine muscle colour stability and tenderness
- To evaluate the rate and extent of proteolysis

# Hypothesis

- The following null hypotheses will be tested
  - $H_0$: Horro beef muscles have no difference in colour stability
  - $H_0$: Horro beef muscles do not have difference in WBSF
  - $H_0$: Horro beef muscles do not have difference in consumer preference
  - $H_0$: There is no hazard in Horro beef processing centre
  - $H_0$: Sarcomere length do not affect tenderness of Horro beef muscles
  - $H_0$: Aging of Horro beef muscles have no effect of proteolysis

# 2 Materials and Methods

2.1. The study area

- Oromia (Dano-Bako districts)
- Addis Ababa abattoir

2.2 Methodologies and data collection

- Husbandry data designed to evaluate quality and safety (survey conducted)
  - data collection completed
- Consumer panel evaluation of muscle quality (AMSA, 1995 and Meilgaard, 1991)
  - data collection completed

# Materials and Methods (cont …)

- Analytical evaluation of mucle color pigment (Mendenhall, 1989)
- Application of principles of HACCP in abattoir (Savell, 1995)
- WBSF evaluation of muscles (Wheeler, 1997)
- Examination of muscles sarcomere (Locker, 1960)
  - Partly completed
- Quantification of CAF (Koohmaraie, 1995)

# 3 Expected output

- Measures toward quality and safe beef production will be notified
- Consumer preference for retail beef will be identified
- Shelf life of sub primal cuts (muscles) will be determined
- WBSF evaluation will be used for value added retail
- CAF based proteolysis in aging beef will be indicated
- Beef quality improvement alternatives will be suggested

END

THANK YOU!